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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,984	02/27/2002	Steven A. Sunshine	018564-002420US	8127

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EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT PAPER NUMBER

2815

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
10/083,984

Applicant(s)  
Sunshine et al.

Examiner  
B. William Baumeister

Art Unit  
2815



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Mar 10, 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 29-31, 41, and 48-53 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-31, 41, and 51-53 is/are rejected.
- 7) ☒ Claim(s) 48-50 is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some\* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 5, 9 6) ☐ Other:

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 30, 31, 41 and 51-53 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

- a. Claims 30, 31 and 53 present new matter because Applicant's specification does not set forth an "environmental parameter isolation means such that the environmental parameter is the dominant influence affecting the electrical resistance of said composite" as recited in claim 30. Applicant urges that support is found in the specification at page 4, lines 31-33, bridging to page 4, lines 1-3 (REMARKS, page 5). However, while this recited passage--relating to contacting the resistors (or field sensor composites) to analyte solutions--may be deemed to constitute "a coupling mechanism" as set forth in claims 29, 48 and 53, it does not set forth any means that isolate the device from other environmental factors.

- b. Applicant further asserts that the recited thermal insulation isolation means of claim 31 is supported by the specification such by the passage set forth at page 3, lines 1-4.

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However, this passage relates to the potential processing techniques by which the conductive particles may be aligned in the field sensor composite non-conducting medium; it does not relate to isolation means, in general, nor specifically to thermal insulation isolation means.

c. Similarly, Applicant asserts that the same passage of the specification supports claim 41, directed towards an applied magnetic field constituting the environmental parameter. However, as was just explained, this passage relates to the potential processing techniques by which the conductive particles may be aligned in the field sensor composite non-conducting medium; it does not relate to environmental parameters to be measured, in general, nor specifically to an environmental parameter that is a magnetic field.

d. Claim 51 further sets forth that the surface of the composite is coated with a surface layer whose surface stress changes when exposed to the selected chemical. For support Applicant recites the passage of page 10, lines 7-9: "In certain embodiments, the resistor is deposited as a surface layer on a solid matrix that provides means for supporting the leads. Typically, the solid matrix is a chemically inert, nonconductive substrate, such as a glass or ceramic."

In fact, though, Applicant's resistor, itself, is constituted by the combination of the nonconductive matrix and the aligned particles that are formed therein. Restated, the non-conductive substrate and conductive particles read on the sub-components of the field-structured composite, itself, as already set forth in claim 29: "a solid nonconducting medium" and "an

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ordered aggregate structure,” respectively. As such, nothing in Applicant’s specification discloses an additional surface layer that is coated on top of this field-structured composite, or resistor.

e. Applicant has asserted that claim 52--relating to a non-conductive medium that is porous--is supported by portions of the specification disclosing that the nonconductive region swells. The examiner notes that the disclosure of a material that “swells” does not provide support for a material that is “<sup>porous</sup>~~amorphous~~.” Further, Applicant’s only disclosure in the specification of a porous non-conducting medium is in relation to Prolss, USP # 4,177,228 (see page 7, lines 11- of the parent ‘999 application and page 8, lines 17- of the present application). As Applicant acknowledges in the specification, this patent is not related to a sensor. Rather it relates to a porous membrane wherein aligned particles are initially formed in the membrane, but are subsequently removed in order to cause the membrane to obtain its micro-porosity. Nothing in the specification discloses a porous non-conducting medium that includes an ordered aggregate structure of conducting magnetic particles therein.

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***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claim 29 is rejected under 35 U.S.C. 102(b) as being anticipated by Jin et al. '101.

Jin discloses a pressure sensor (field-structured composite) comprising a non-conductive matrix (solid non-conducting medium) 35 and conductive magnetic particles 34 within the medium; electrodes 32 positioned to allow the electrical resistance of the composite to be measured; and a pair of substrates 31 that apply pressure to the composite in response to an applied force (a coupling mechanism which couples the environmental parameter (pressure) to the composite). See e.g., col. 2, lines 67-: current flows only upon application of local pressure sufficient for causing particles to penetrate the respective nonconducting coatings 33 and thus to come into contact with conductive coatings 32. Also, col. 4, lines 1-25, e.g., discusses the alignment of the magnetic particles in the composite medium by application of an electric field.

*Allowable Subject Matter*

5. Claims 48-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: As was stated above, Jin teaches a field-structured sensor comprising a field-structured composite with an ordered aggregate structure of conducting magnetic particles, but does not disclose that the structure may be employed for chemical detection as set forth in claim 48.

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Other references teach that it was generally known to make chemical sensors from non-conducting composites having conductive particles homogeneously dispersed therein and wherein exposure to particular chemicals causes the matrix to swell and change the resistivity. See e.g., Lewis et al. 5,698,089 and Debe 5,238,729 (background), previously made of record; and Donaghey '952 which further discloses that the conductive particles may be composed of ferrite (magnetic particles). However, a search of the relevant art failed to disclose or reasonably suggest forming the chem-sensors' conductive particles such that they are "aligned" in a "field-structure" (aligned by a field).

Also, Debe '729 teaches analyte sensors wherein microstructures of whisker-like structures conformally coated with magnetic conductive layers (e.g., col. 6, lines 60-) are formed in a regular array, and teaches that the use of such microstructures enables formation of a chem-sensor that has anisotropic resistance and capacitance, useful for multimode operation (e.g., col. 2, lines 26-40). However, as the magnetic conducting material is provided in the form of a conformal coating, the disclosure does not reasonably read on conducting magnetic "particles," as set forth in claim 29.

Further, while Debe provides motivation for why one would have wanted chemiresistors with conductive materials that are anisotropically arrayed (specifically, for multimode operation) the Examiner finds that Debe's teaching of this desired general goal does not sufficiently suggest modifying the chemiresistors having homogeneously dispersed particles by means of the specific solution of applying a magnetic field so as to align (anisotropically array) conductive magnetic

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particles, particularly since Debe teaches an alternative method of providing coated whiskers for achieving this desired goal.

Thus, absent further evidence that the provision of a magnetic field-structured array of magnetic conductive particles (which was known at least for use in pressure sensors) would equally or superiorly achieve the goal of multimode operation of chemiresistors, Debe alone cannot be said to provide sufficient motivation to render the claims obvious over the known homogeneously dispersed devices.

### *Interference*

Claims 29-31, 41 and 48-53 of this application has been copied by the applicant from U. S. Patent No. 6,194,769. This claim is not patentable to the applicant because (1) claim 29 is rejected as being anticipated by Jin et al. '101 and (2) claims 30, 31, 41 and 51-53 are rejected under 35 USC §112, 1st paragraph as containing new matter.

An interference cannot be initiated since a prerequisite for interference under 37 CFR 1.606 is that the claim be patentable to the applicant subject to a judgement in the interference.



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**INFORMATION ON HOW TO CONTACT THE USPTO**

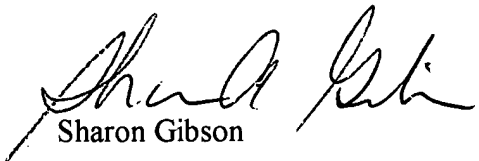
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



B. William Baumeister

Patent Examiner, Art Unit 2815

May 19, 2003



Sharon Gibson

Director, Technology Center 2800